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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,274	03/01/2002	Leo Peter Wessels	9154-030US (US 45233 WO)	2069

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EXAMINER

FORTUNA, ANA M

ART UNIT PAPER NUMBER

1723

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/086,274

Applicant(s)

WESSELS ET AL.

Examiner

Ana M Fortuna

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 01 March 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5. 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claim 1 recites the limitation "flow with gas" in line 4. There is insufficient antecedent basis for this limitation in the claim. Treating aqueous salt solution with gas is not previously mentioned in the claim.
2. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claim 1, flow of gas and or liquid is stated, however the claim is unclear as to whether treating the aqueous salt solution with gas is intended.

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1, 3, 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Andou et al (6,402,956)(hereinafter '956). '956 discloses the treatment of aqueous saline solution to remove contaminants, e.g. desalination of seawater, and the removal of organic matter. The membrane is a dead end spiral wound reverse osmosis membrane module including one or more membranes, no longitudinal flow of liquid is performed

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during the process, since the module is adapted to work in dead end (Fig. 4, column 1, lines 10-23 column 2, lines 1-68, flushing or backwashing the membrane, and removing the concentrate or contaminants retained by the outside membrane is also disclosed (column 5, lines 50-64). Regarding claims 3, and 4, reverse osmosis is disclosed in '956, and having an envelope like or spiral wound configuration (column 13, lines 58-68, column 8, lines 31-38).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andou et al (6,402,956 B1). '956 fails to disclose the flux as claimed in claims 5-6, and the composition of the water as claimed in claim 7. '956 teaches the operating the membrane module at pressures lower than 120 KGF/cm² (column 12, last paragraph). It would have been obvious to one skilled in the art at the time the invention was made to use reverse osmosis membranes in spiral wound configuration which provides a large membrane surface area and therefore large membrane flux as suggested by '956. Operating the membrane module of '956 at the suggested pressure range in a saline solution having the same degree of contamination is expected to generate the same or larger flux due to the membrane surface available and the pre-filtration performed by the micro-filtration (element 5 Fig. 1) membrane of the dead end module.

As to claim 7, TOC and sodium chloride or their ions are expected to be removed by the reverse osmosis membrane, based on the reverse osmosis conventional molecular weight cut-off, which rejects organic matter and mono and divalent ions. As to the composition level, independently of the degree of contaminations these components will be removed from the membrane of combination of pretreatment and membranes as suggested in reference '956 (column 7, lines 36-43).

Regarding claim 8, regenerate is not disclosed in reference '956, however, any slat solution containing TOC, sodium chloride and other mono and divalent salts are expected by the skilled artisan to be retained by a reverse osmosis membrane of '956 or other conventional RO membrane, or its combination with pretreatment.

6. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andou et al (6,402,956)(hereinafter '956) as applied to claim 1 above, and further in view of Hsu (5,853,599) and/or Mickols (6,280,853 B1). '956 teaches removing separating organic matter, the term TOC, or pesticides or humic acid is not disclosed. Hsu teaches reverse osmosis membranes as capable of removing pesticides and various organic matters in a water purification process (column 2, lines 27-50). Mickols teaches reverse osmosis membranes as capable of removing organic matter, in particular humic acid found in some water sources, e.g. sea water (column 1, lines 30-40, column 2, second paragraph). It would have been obvious to one skilled in the art at the time the invention was made to expect rejection of humic acid and pesticide in the process of treating salt water with the membrane of '956, e.g. reverse osmosis membrane in spiral wound configuration, It would have been further obvious to use conventional

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membranes as the ones disclosed in Hsu and Mickols in the module of Andou ('956), since removal of organic matter is desired in the process or membrane properties of the module of '956.

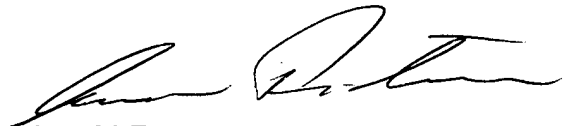
7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andou (6,402,956 B1) as applied to claim 1 above, and further in view of Ancelle et al (4,592,841). Andou ('956) fails to teach passing gas with the solution or water to be separated by the membrane. Ancelle teaches injecting air or inert gas into the feed side to a semipermeable membrane to slow down the clogging of the membrane (column 3, lines 60-65). It would have been obvious to one skilled in the art at the time the invention was made to inject air in a membrane as suggested by Ancelle, and further to expect a non-longitudinal (tangential flow), in a module designed for dead end., and the one disclosed in '956. the gas will be entrained in the liquid and passed perpendicular to the outside of the spiral wound membrane module is expected in operation. This rejection is based on interpretation of claims 1 and 2 as including a mixture of gas and liquid.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References 3,992,301, 5,922,200, 6,406,626 B1, 6,451,209 B1 are cited as teaches introducing air for cleaning reverse osmosis membranes, and reverse osmosis membrane for removing pesticides, TOC, humic acid, etc.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M Fortuna whose telephone number is (703) 308-3857. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (703) 308-0457. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Ana M Fortuna
Primary Examiner
Art Unit 1723

Ana Fortuna
July 23, 2003